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of one who is expert only in his own special field or of one who has no expert knowledge of any branch. In the first case, the outcome would be what is seen in so many other governmental departments already: the subordination of able and competent men to an official without the ability to direct and who is made an official superior over men, each in his own department, without superior. In the second alternative case, the Secretary of the Navy, usually a man without any expert knowledge of the technical work of the service, will have, interposed between himself and the men who are competent to advise him, each in his own province, an officer equally incompetent with the Secretary himself—with the added and fatal disadvantage of giving to the new incompetent, authority over men technically educated and fully competent.

The vital principle that every important business should be conducted by an expert in that business is, in this case, ignored. Either course would, in the opinion of those most competent to judge, insure inefficiency in the operation of the naval service, of that arm on which the nation most relies to defend its honor and its rights in conflict with a foreign foe. But the most dangerous of foes is the amateur, in the position of an expert, controlling an important branch of public service.

The 'Personnel Bill,' passed by Congress as an emergency measure during the excitement attending the outbreak of the war with Spain, and which consolidates the whole Naval Engineer Corps with the Line of the Navy, seems to have worked a mischief in a similar manner. Amateur talent is entrusted with duties and responsibilities which can only be safely assigned to experts of high scientific education, thorough professional training and ample experience. The members of the old Engineer Corps are dying off and the whole business of engineering is nominally becoming shifted into the hands of line-officers without other than amateur knowledge of the business, and with obvious danger to the whole naval service. Either the law is defective or it is not found practicable to secure its intended results; but, whichever may be the fact, the important outcome is danger of sacrifice of the vital interests

of the Navy to amateur incompetence. Nor is there the excuse in lack of knowledge of the danger, in advance. Every report of the chiefs of bureau of earlier years, for a generation past, has included a warning, often earnest and impressive, of this coming danger; while, throughout the whole period, the steady reduction of the numbers of officers in this most vitally important of all divisions of the modern naval personnel has been progressing, and the dangerous change has been advancing toward a crisis, despite the constant warnings, not only of all chiefs of bureau, but of substantially all old members of the wrecked corps.

The constant danger to the Naval Observatory and its personnel through amateurism has been as constant a subject of protest, in the same manner and with no better result; but this introduction of amateurism into the sea-going navy is even more serious and is certain to result in more serious disaster.

R. H. THURSTON.

A Record of the Geology of Texas for the Decade ending December 31, 1896. By FREDERIC W. SIMONDS, Ph.D., Professor of Geology in the University of Texas—Transactions Texas Academy of Science for 1899, Vol. 3, Austin, Texas, October, 1900.

This work is deserving of more than passing notice for Professor Simonds has not only given a most painstaking and complete bibliography of the geology of the Texas region, but as truly expressed in the title a record of the same. Each of the 466 works noted is accompanied by an intelligent abstract or synopsis, so that this book becomes of greatest value to any one wishing to ascertain information concerning the Texas region for the decade ending with the year 1896. The task of compiling such a work at Austin, so remote from good library facilities, must have been enormous, and is a credit to Professor Simonds, the Texas Academy of Science and the University of Texas.

It is gratifying also to note that this work is but one of the recent manifestations of the quickened and improved condition of the University of Texas. Within the past ten years this institution has been gradually acquiring a faculty of progressive and able men and has made

a steady growth in every department, which places it in the front rank of Southern institutions and equal, if not ahead, of many of the older colleges of the North. Under the administration of President Prather its work is steadily advancing and it is to be hoped that the Legislature of Texas will see the necessity of an enlarged and ample endowment.

ROBT. T. HILL.

BOOKS OF REFERENCE.

WE have received from Messrs. Lemcke & Buechner, New York, the tenth volume of the invaluable year-book of the learned world, 'Minerva,' which is now a volume of 1,235 pages. The frontispiece is an etching of Professor W. C. Röntgen, the other men of science selected for this purpose in previous volumes having been Pasteur, Kelvin, Schiaparelli and Nansen. The editor has been compelled to give up his plan of including in the work data of international congresses, which is regrettable, though the task of securing such information is doubtless difficult. As it is the work contains a vast mass of information—a rough calculation indicates that the names of about 32,000 scientific and learned men, connected with the world's institutions of learning, are included. The statistics of students given at the end show that the universities having an attendance of over a thousand students are distributed as follows: United States, 26; Germany and Austria, 24; Italy, 10; Great Britain and France, 8 each; Russia, 7; Spain, 4; Norway and Sweden, 3; Switzerland, Belgium and Canada, each 2; Denmark, Portugal, Egypt, Brazil, Chili, Philippines, New Zealand and Japan one each.

'Who's Who' for 1901, published in London by the Blacks, and in New York by the Macmillans, is also a useful work of reference, giving as it does short biographies of the leading men and women of Great Britain and of a few Americans. All the leading British men of science are included, and it is interesting to note how many there are and what important work they have accomplished. It is impossible to discover by what principle or lack of principle the Americans have been selected. The provost of the University of Pennsylvania is

there, but not the president of Harvard University. Mr. Tesla is included, but not the two or three of our most eminent men of science who have been looked up. The editing of the book appears to be careful, but not perfect. Thus to take a somewhat trivial example, Francis Darwin is said to be the son of 'Charles Robert Darwin,' George Howard Darwin is said to be the son of 'the late Charles Robert Darwin (author of the 'Origin of Species,' etc.)' and Leonard Darwin is said to be the son of 'the celebrated Charles Darwin, Down, Kent.' The 12,000 biographies, more or less, which the volume contains are certainly most useful for reference. In this connection it may be stated that a new edition of the American 'Who's Who' is in preparation, and the editor Mr. John W. Leonard, care of A. N. Marquis & Co., Chicago, will be glad to secure corrections and additions to the last edition.

BOOKS RECEIVED.

Practical Electro-chemistry. BERTRAM BLOUNT. New York, The Macmillan Company; London, Archibald Constable & Company. 1901. Pp. xi + 374.

Electricité et Optique. H. POINCARÉ. Paris, Georges Carré and C. Naud. 1901. Pp. ii + 641.

The Bird Book. FANNIE HARDY ECKSTORM. Boston, D. C. Heath & Company. 1901. Pp. xii + 276. \$60.

Elevation and Stadia Tables. ARTHUR P. DAVIS. New York, John Wiley & Sons; London, Chapman Hall, Limited. 1901. Pp. 43.

Laboratory Instructions in Chemistry. ERNEST A. CONGDON. Philadelphia, P. Blakiston's Son & Company. 1901. Pp. viii + 110.

Studien über den Milchsaft und Schleimsaft der Pflanzen. HANS MOLISCH. Jena, Gustav Fisher. 1901. Pp. viii + 111.

Die Reizeleitung und die reizleitenden Strukturen bei den Pflanzen. B. NEMEC. Jena, Gustav Fisher. 1901. Pp. 153. Tafeln 111.

Seventeenth Annual Report of the Bureau of American Ethnology. J. W. POWELL. Washington, Government Printing Office. 1898. Part II. Pp. 752.

SCIENTIFIC JOURNALS AND ARTICLES.

THE *Botanical Gazette* for January, 1901, contains a second contribution by Professor C. S. Sargent, 'On New or Little Known North American Trees.' This special fascicle of descriptions